Explosive & Flammable Operations
24 CFR Part 58.5(i)(1)

Training Topics:

- **Purpose & Authority**
- **Applicability**
- **Data Collection**
- **Calculating ASD**
- **ERR Documentation**

“Tank explodes Near Low Income Housing”

24 CFR Part 51 - Subpart C

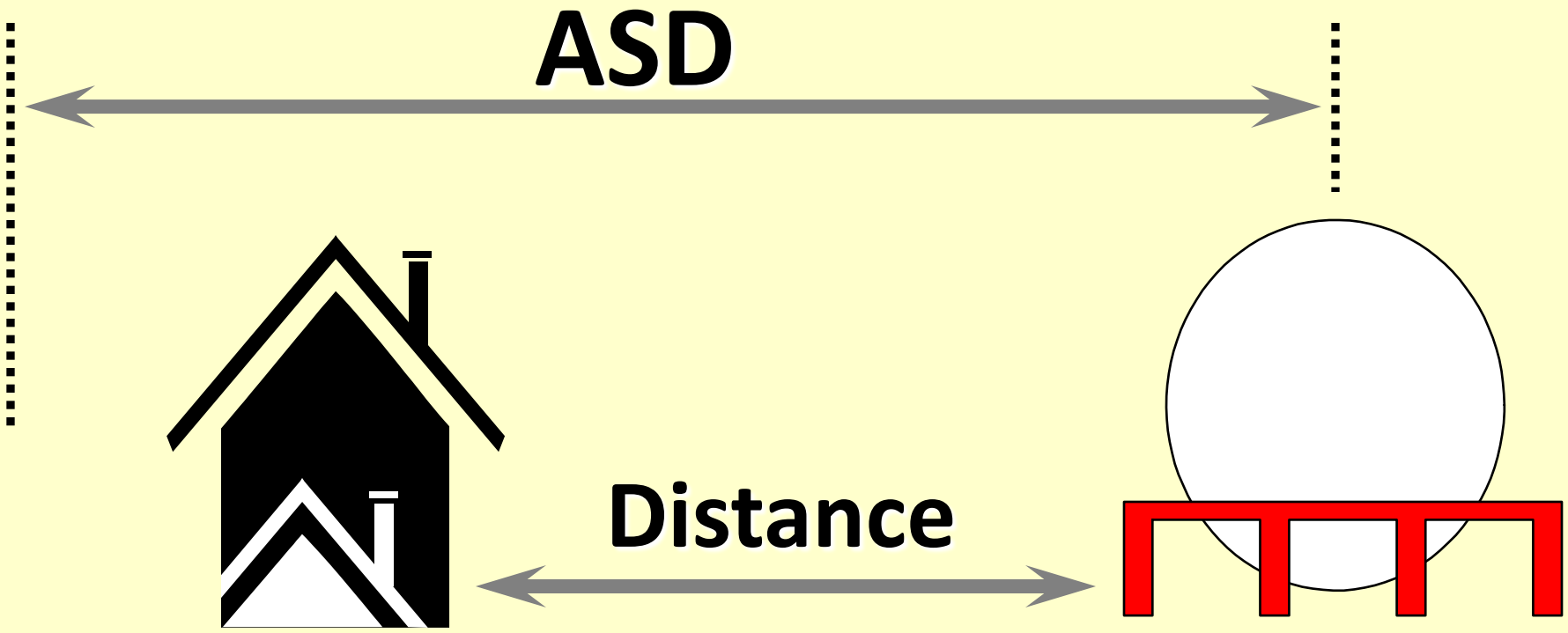
Above Ground Storage Tanks (ASTs)

- "Siting of HUD-Assisted Projects Near Hazardous Facilities"

- Explosive / Flammable Operations – Stationary commercial/industrial facilities which handle chemicals or petrochemicals of explosive or flammable nature – **above ground tanks**

Acceptable Separation Distance (ASD)

A project within the ASD is in harm's way



HUD Guidebook

"Siting of HUD Assisted Projects Near Hazardous Facilities"

- Guidebook is used to calculate acceptable separation distance (ASD) for blast overpressure (**explosion**) and thermal radiation (**fire**)

- Flowchart of decision process: See page 14 of guidebook [#HUD-1060-CPD (1996)]. Call to order: 800-767-7468

Acceptable Separation Distance

Follow procedures in HUD guidebook…

- ASD is based on level topography and no intervening objects
- The hazard requiring the greatest separation distance, either fire or explosion, will determine the ASD for the proposal
- If the ASD is less than the actual distance, site is considered adequate

Safety Standards

Two ASD standards – one for buildings, one for people

- Structures:
  - Thermal Radiation (fire) – 10,000 BTU /Ft. sq Hr.
  - Blast Overpressure (explosion) – 0.5 PSI
- People:
  - Thermal Radiation (fire) – 450 BTU/Ft. sq Hr.

Applicable Activities

Bringing project to the tanks…or tanks to people

- Residential, involving:
  - New Construction
  - Conversion of land use to residential
  - Rehabilitation where density increased
  - Vacant unit is made habitable
- Any project (industrial, commercial, recreation) where people may congregate or be present

Excluded Tanks

Exclude, but notate in environmental review

- High pressure gas and liquid petroleum transmission pipelines
- Underground tanks (e.g, gasoline service stations)
- Mobile conveyances (barges, tank trucks, railcars)
  - ✓ *HOWEVER* - Mobile conveyances are included at the times they service a stationary facility
- Storage containers with 100 gallons or less of common liquid industrial fuel
- Residential (1-4 unit) tanks having common fuels
- Natural gas holders with floating tops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Detecting hazardous operations

Determine if any AST within 1 mile of site

- Aerial Maps (e.g., Google Earth)
- Topographic maps
- Site Visit and photos of surrounding area
- Local gov't (e.g., fire marshal)

Calculating ASD

Collect the data…

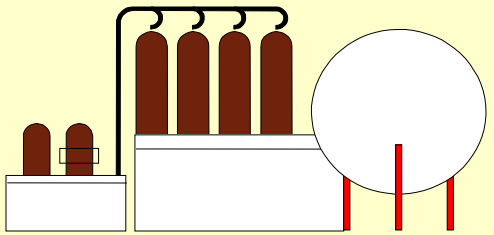
- Type of Container determines whether ASD for explosion must be calculated

  - Unpressurized - calculate for Thermal Radiation only
  - Pressurized - calculate for both Blast Overpressure and Thermal Radiation

Calculating ASD

Data needed…

1. size of the tank
2. contents
3. liquid or gas
4. pressurized/ not under pressure
5. distance from project site

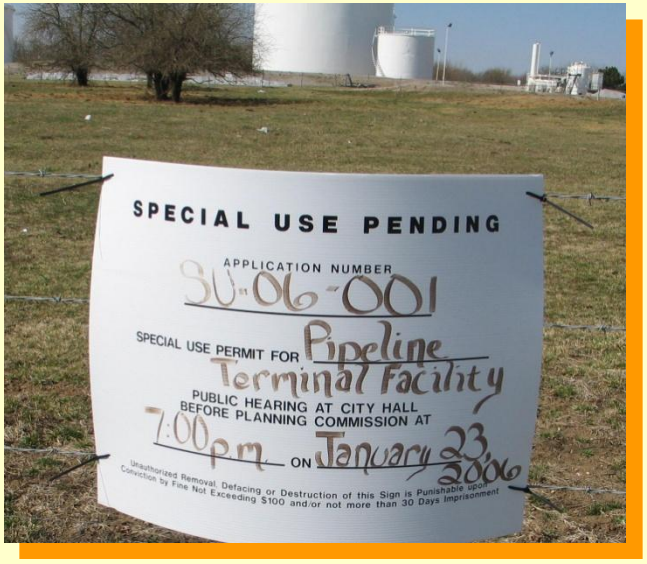


Then calculate using pp 52-53 of the guidebook ***or*** use HUD on-line tool

hud.gov/offices/cpd/environment/asdcalculator.cfm

Data sources

- Site Manager/Owner
- Fire Dept/Haz-Mat
- Planning Dept
- Phase I



Clues from Site Visit

Calculating ASD

Diked or Not-Diked…

- Diked facility - perimeter barrier to prevent liquid flow

Mitigation

Barriers must be properly engineered

- Shield by topography, existing structures, or barriers
- Design project to withstand blast over-pressure and thermal radiation
- Bury tanks
- Move tanks away from people
- Move project away from tanks

Documentation for ERR

If activity/project is subject to the regulation…

- Document **presence/absence** of tanks within 1 mile of project
- **Map** the container(s) in relation to project
- **Calculate** the ASD, if necessary
- **Mitigate** project, if within the ASD
- Ensure **conditions** /mitigation is included in project agreements and contracts